Amended Claims 1 to 51

1. Composite body, comprising:
   - a first body part (15) made of glass and having an opening, and
   - a mechanical connection (20, 60),

   the composite body being a flash lamp,
   characterized in that
   - the connection (20, 60) is melted onto the first body part (15),
   - the connection contains aluminium having a purity of at least 99 weight per cent, and
   - the opening of the first body part (15) is closed by the connection (20, 60).

2. The composite body according to claim 1, characterized by a second body part (10, 14, 55, 61) made of metal or glass, the connection (20) connecting both body parts (10, 14, 15, 55, 61).

3. The composite body according to one or more of the preceding claims, characterized in that the first body part (15) at least regionally includes rounded edges (15a) where it contacts the connection (20, 60).

4. The composite body according to one or more of the preceding claims, characterized in that the first body part (15) at least regionally includes material reinforcements (15a) where it contacts the connection (20, 60).

5. The composite body according to claim 1, characterized in that the opening accommodates an auxiliary part (51) consisting of a material having a thermal expansion coefficient smaller than that of aluminium, preferably glass, and connected to the first body part (15) by means of the connection (20, 60).

6. The composite body according to claim 1, characterized in that the opening accommodates a second body part (59) serving as an inner electrode and including a metallic material having a thermal expansion coefficient smaller than that of aluminium, preferably a sintered body, which is connected to the first body part (15) by means of the connection (20, 60).

7. The composite body according to claim 6, characterized in that an uncovered surface portion of the second body part (59) protrudes into the interior of the composite body while the surface of the second body part (59) protruding to the exterior is covered by the connection (20, 60).

8. The composite body according to one or more of the preceding claims, characterized in that the connection (20, 60) includes a grained and/or powdery filler (60) having a thermal expansion coefficient smaller than that of aluminium.

9. The composite material according to claim 8, characterized in that the filler (60) includes glass powder, in particular quartz glass powder, and/or oxides and/or metal, particularly tungsten or molybdenum.

10. The composite body according to one or more of the preceding claims, characterized in that the first body part (15) and the

connection (20, 60) are parts of an air-tight or vacuum-tight housing.

11. The composite body according to claim 10, characterized in that inside of the housing an electrode (41, 53, 54, 61 – 63, 72) is provided which is electrically connected to the connection (20, 60).

12. The composite body according to claim 11, characterized in that the electrode is mechanically held by the connection (20, 60).

13. The composite body according to one or more of the preceding claims, characterized in that the first body part (15) is part of a housing consisting of glass and the second body part (10, 14, 55, 61) is a metallic wire (10) extending from the interior to the exterior of the housing.

14. The composite body according to one or more of the preceding claims, characterized in that the glass includes an oxidic glass, particularly hard glass or quartz glass.

15. The composite body according to one or more of the preceding claims, characterized in that the softening point of the glass is above the melting point of the connection (20, 60).

16. The composite body according to one or more of the preceding claims, characterized in that the metal includes copper and/or nickel and/or tantalum and/or tungsten and/or molybdenum.

17. The composite body according to claim 2, characterized in that the second body part (10, 14, 55, 61) is a preferably cylindrical glass body (55) at least partially coated with aluminium, which

is partially inserted in an opening of the first body part (15) and partially protrudes therefrom.

18. The composite body according to one or more of the preceding claims, characterized in that the first body part (15) is a glass tube at least one end of which is closed by the connection (20, 60).

19. The composite body according to claim 18, characterized in that the second body part (10, 14, 55, 61) includes a metallic portion (61) preferably consisting of molybdenum and/or tungsten which is inserted inside of the tube in the connection (20, 60), as well as a wire (10) inserted from the outside in the connection (20, 60).

20. The composite body according to one or more of the preceding claims, characterized in that the first body part (15) is a glass tube one end of which is closed by the connection (20, 60), the connection (20, 60) including caesium and/or barium and/or their oxides on the inner surface (72).

21. The composite body according to one or more of the preceding claims, characterized in that the first body part (15) is a glass tube one end of which is closed by the connection (20, 60), the connection (20, 60) including a solder layer (71) on the outer surface.

22. The composite body according to one or more of the preceding claims, characterized in that the metal proportion of the connection (20, 60) is an aluminium alloy containing at least 90 weight per cent of aluminium.

23. The composite body according to one or more of the preceding claims, characterized in that the metal proportion of the connection (20, 60) contains at least 98 weight per cent of aluminium.

24. The composite body according to claim 22 or 23, characterized in that the proportion needed to complete 100% includes silicon and/or magnesium and/or manganese and/or calcium.

25. The composite body according to one or more of the preceding claims, characterized in that the connection on the outer surface comprises a metallic coating including in particular one or more of the elements tin, silver, copper, zinc, cadmium, lead or including alloys of these elements.

26. The composite body according to one or more of the preceding claims, characterized in that the first body part (15) is a tube having in one portion (81) of its closure by the connection (20, 60) at least regionally a cross-sectional shape other than that in the free portion (82).

27. The composite body according to claim 26, characterized in that together with the connection (20, 60) the tube in the closure portion (81) has a cross-sectional shape wherein a cross-section through the connection respectively has a dimension DV of at most 1 mm, preferably 0.3 mm and more preferably 0.1 mm.

28. The composite body according to claim 26 or 27, characterized in that together with the connection (20, 60) the tube in the closure portion (81) has a cross-sectional shape wherein a cross-section through the connection has a dimension DV which respectively is at most 10 %, preferably 3 % and more preferably

1 % of a cross-sectional dimension DK throughout the whole body at the same site.

29. The composite body according to claim 27 or 28, characterized in that together with the connection (20, 60) the tube in the closure portion (81) has a cross-sectional shape wherein a cross-section through the connection has a dimension BV which is larger than the inner diameter DI of the tube in the free portion (82).

30. The composite body according to one or more of the preceding claims, characterized in that at least one end of the tube is formed in a bent manner.

31. The composite body according to claim 30, characterized in that the bending comprises an angle (μ) ranging between 45° and 135°, preferably between 80° and 100°.

32. The composite body according to claim 30 or 31, characterized in that the connection (20, 60) serves as an outer electrical, preferably solderable connection.

33. The composite body according to one or more of claims 30 to 32, characterized in that the closure portion (81) is formed according to one or more of claims 27 to 29.

34. The composite body according to one or more of the preceding claims, characterized in that the connection (20) includes no coating at any time which serves to protect against oxidation and in particular consists of another metal.

35. Method for producing a flash lamp which is a composite body according to one or more of the preceding claims, comprising the steps of:
    - Providing a first body part (15) consisting of or containing glass and having an opening, and
    - attaching a connection (20) to the first body part (15),

    characterized in that
    - aluminium having a purity of at least 99 weight per cent is used for the connection,
    - the connection is heated beyond its melting point and melted onto the first body part (15),
    - the connection being purified from oxide components before melting it onto the first body part (15), and
    - the opening of the first body part (15) being closed by the connection.

36. The method according to claim 35, characterized in that after heating beyond its melting point the connection is purified from oxide components.

37. The method according to claim 35 or 36, characterized in that the first body part is connected to a second body part by means of the connection.

38. The method according to one or more of claims 35 to 37, characterized in that before producing the connection the first body part is at least regionally rounded where it contacts the connection, particularly by beginning to melt the body part.

39. The method according to one or more of claims 35 to 37, characterized in that before attaching the connection to the first body part where it contacts the connection a material rein-

forcement is at least regionally formed, particularly by beginning to melt the body part.

40. The method according to one or more of claims 35 to 38, characterized in that an auxiliary part consisting of material having a thermal expansion coefficient smaller than that of aluminium, preferably glass, is positioned in the opening and then connected to the first body part by means of the connection.

41. The method according to one or more of claims 35 to 40, characterized in that before attaching the connection the aluminium-containing substance is mixed and melted with a grained and/or powdery filler having a thermal expansion coefficient smaller than that of aluminium.

42. The method according to one or more of claims 35 to 41, characterized in that the melting of the connection onto the first body part is accomplished in the absence of oxygen, preferably in a protective gas atmosphere or in a vacuum.

43. The method according to claim 42, characterized in that a gas is used as a protective gas with which the closed composite body is to be filled.

44. The method according to one or more of claims 35 to 43, characterized in that the melting of the connection onto the first body part is accomplished at a temperature at which the connection has melted and at which the glass does not soften.

45. The method according to claim 44, characterized in that the melting of the connection onto the first body part is accom-

plished at a temperature which facilitates the diffusion of alumina into the glass.

46. The method according to one or more of claims 35 to 45, characterized in that during producing the mechanical connection the connection material and the first body part are gradually heated together.

47. The method according to one or more of claims 35 to 46, characterized in that a tubular body part is used the end of which is flattened.

48. The method according to claim 47, characterized in that the flattening is performed after attaching the connection, the glass being heated beyond its softening point before the flattening.

49. The method according to claim 47 or 48, characterized in that the end of the tube is bent.

50. The method according to one or more of claims 35 to 49, characterized in that the connection is heated to at least 700°C before it is melted onto the first body part.

51. The method according to one or more of claims 35 to 50, characterized in that the heating of the connection and its purification from oxides is accomplished in a protective gas atmosphere.